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Douglas E. LeCrone

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GEORGE A. HERBSTER

40 BEACH STREET

SUITE 303

MANCHESTER, MA 01944

EXAMINER

EBIRIM, EMEKA

ART UNIT

PAPER NUMBER

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/692,285	Applicant(s) LECRONE ET AL.	
	Examiner Emeka Ebirim	Art Unit 2166	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 51-91 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 51-91 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>06/04/04, 10/23/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Status

1. The application has been examined and claims 51-91 are rejected as detailed below and are pending in this office action.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. To be statutory, a claimed computer-related process must either: (A) result in a physical transformation outside the computer for which a practical application is either disclosed in the specification or would have been known to a skilled artisan, or (B) be limited to a practical application with useful, concrete and tangible result.
4. Claims 51-91 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 51-91 are not limited to tangible embodiments in view of Applicant's disclosure. There appears to be no useful result recited that reflects the practical utility in the descriptive portion of the specification [page 4].

These claims appear to constitute solely software per se and/or appear to constitute solely an abstract idea without any practical application. These claims do not

indicate use of hardware on which the software runs to perform the steps recited in the body of the claim. The program does not appear to have been stored in a tangible storage medium therefore it is program per se. Software or program can be stored on a medium and/or executed by a computer.

In other words the software must be stored in a tangible medium. As such, these claims are not limited to statutory subject matter and are therefore non-statutory.

Claim Objections

5. Claims 53 and 61 are objected to because of the following informalities:

Claim 53 depends on a cancelled claim 2.

Claim 61 depends on a cancelled claim 10.

For the purposes of this office action examiner presumes claims to depend on the preceding claims. Applicant is required to make the appropriate corrections as required to all other claims that may have similar improper dependent form.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140

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F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 51-91 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-50 of U.S. Patent No. 6,662,197. Although the conflicting claims are not identical, they are not patentably distinct from each other because It would have been obvious to one of ordinary skill in the art at the time of the invention was made to omit elements and its function if the remaining elements perform the same functions as before. See *In re Karlson*, (CCPA)136 USPQ 184, decided January 16, 1963.

The following chart provides the correspondence between the instant claims and the claims of Patent No 6,662,197.

Instant Application No: 10692285	Pat No: 6,662,197
51	1
52	2
53	3

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91	26

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 51-59 are rejected under 35 U.S.C. 102(e) as being anticipated by Pat

No: 6,324,654 to Wahl et al (hereinafter Wahl).

Claims 1 through 50 (canceled).

Claim 51

Wahl discloses:

A program for obtaining information about the number of updates to data blocks in data block locations in a data storage facility over a time interval, said program comprising processes for providing [data updates, See Wahl abstract]:

- A) a definition of a data group set of at least one of the data blocks [logical groups of data, See Wahl Col 3 lines 21-25],
- B) a definition of an interval corresponding to the time period for which update information is desired [period of time, update, See Wahl Col 7 lines 27-29],
- C) a recording, during the defined interval, of only a first update to each data block location for data in the data group set [writelog device, See Wahl Col 7 lines 18-30],

- D) a transfer to the data group set of the information obtained by said recording after the defined interval [writelog device sent across the network, See Wahl Col 7 lines 18-30],
- E) a determination, from the information in the data group set, the total number of data block locations in the data group set that were updated at least one time during the defined interval [timestamp, sequence number, See Wahl Col 7 lines 20-24], and
- F) a conversion of the total number of data block locations changed during into bandwidth based information about all the transfers involved in updating during the defined interval [bandwidth, See Wahl Col 3 lines 39-43, Col 5 lines 35-38].

Claim 52

Wahl discloses the elements of Claim 51 as above and furthermore it discloses wherein said recording includes a definition of a flag for each data block and altering the state of each flag upon receiving a first update to a corresponding data block [flag, Wahl Col 21 lines 20-24].

Claim 53.

Wahl discloses the elements of Claim 52 as above and furthermore it discloses wherein said recording additionally includes:

- i) an establishment of a first state for each flag at the beginning of the defined interval [flag, Wahl Col 21 lines 20-24]
, and

- ii) an establishment of a second state for an individual flag when the corresponding data block is updated a first time, said recording counting the total number of flags in the second state at the end of the defined interval [flag, Wahl Col 21 lines 20-24].

Claim 54.

Wahl discloses the elements of Claim 52 as above and furthermore it discloses wherein said recording includes a storage in an other dataset an identification of the time interval, data group and the defined flags [period of time, storage, sequence number, logical group, See Wahl Col 3 lines 23-25, Col 7 lines 20-30, 52-53].

Claim 55.

Wahl discloses the elements of Claim 52 as above and furthermore it discloses wherein the define interval is divided into subintervals and said recording includes a storage, for each data group in the data group set, of identifications of the subinterval and data group and the defined flags [time-sequence, storage, flag, See Wahl Col 5 lines 29-38, Col 21 lines 20-24].

Claim 56.

Wahl discloses the elements of Claim 55 as above and furthermore it discloses:

- i) an establishment of a first state for each flag at the beginning of each sample subinterval [flag, Wahl Col 21 lines 20-24], a
- ii) an establishment of a second state for an individual flag when the corresponding data block is updated for a first time, said recording counting the total number of flags in the second state at the end of the sample subinterval [flag, Wahl Col 21 lines 20-24].

Claim 57.

Wahl discloses the elements of Claim 51 as above and furthermore it discloses wherein updates to the data storage facility are copied over a data communications path having predetermined characteristic to a data facility, said program additionally comprising determination, from information obtained during said recording in combination with a first characteristic of the data communications path, of a second characteristic of the data communications path [copy, data, transfer, site, See Wahl Col 4 lines 42-45, Col 18 lines 40-44].

Claim 58.

Wahl discloses the elements of Claim 57 as above and furthermore it discloses wherein the data facility operates as a mirror for the data

storage facility for maintaining a synchronized copy of the data therein and wherein said program obtains, as the first seconds characteristics respectively, bandwidth and time for the mirror to achieve synchronism for the recorded update activity for that given bandwidth [synchronous data, mirror, copy, data, transfer, site, bandwidth, See Wahl Col 4 lines 37-45, Col 18 lines 40-44].

Claim 59.

Wahl discloses the elements of Claim 57 as above and furthermore it discloses wherein the data facility operates as a mirror for the data storage facility for maintaining a synchronized copy of the data therein and wherein said program determines as the first and second characteristics respectively, the time required for the mirror to achieve synchronism for the recorded update activity and the bandwidth required to achieve that resynchronization time [synchronous data, mirror, copy, data, transfer, site, bandwidth, See Wahl Col 4 lines 37-45, Col 18 lines 40-44].

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claim 60, 76 are rejected under 35 U.S.C. 102(e) as being anticipated by Pat No: 6,085, 298 to Ohran (hereinafter Ohran).

Claim 60.

Ohran discloses:

A program for determining, from a local site with local data storage facility, bandwidth related characteristics for a communications path that transfers data, produced by update operations, between first and second remote data storage facilities over a communications path wherein each of the data storage facilities stores data in datasets in data blocks, said program comprising processes for providing [data block, bandwidth, remote site, storage, communication link, Ohran Fig 1-6, Col 6 lines 25-39]:

- A) a definition of a set of data blocks in the local site data storage facility [primary backup system (local), data blocks, Ohran Fig 1-6, Col 6 lines 25-39]
- B) a definition of defining a time interval [periodic schedule, Ohran Fig 1-6, Col 21 lines 58-60],

- C) a recording of an identification of each data block in the local data storage facility that is updated during the interval [identify, record, update, data block, Ohran Col 17 lines 62-67, Col 18 lines 8-10, Fig 7A-B]
- D) a determination, upon completion of the time interval, of the number of data blocks in the defined set of data blocks that were updated during the time interval [Ohran Col 8 lines 57-62], and
- E) a conversion of the information based upon the number of data blocks that were changed during the defined time interval into bandwidth related properties of the communications path [data block, bandwidth, remote site, storage, communication link, Ohran Fig 1-6, Col 6 lines 25-39].

Claim 76.

Claim 76 is essentially the same as claim 60 and it is rejected for the same reason as applied hereinabove

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 61-75, 77-91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohran in view of Wahl.

Claim 61.

Ohran discloses the elements of Claim 60 as above and furthermore it discloses:

- i) a definition of a table with a position corresponding to each of the defined data blocks tracks and each position being set to a first state [identify, record, data block, Ohran Col 17 lines 62-67, Col 18 lines 8-10, Fig 7A-B], and
- ii) a setting of a position corresponding to a defined data block during the defined time interval to a second state in response to a first update operation [identify, record, data block, update, Ohran Col 17 lines 62-67, Col 18 lines 8-10, Fig 7A-B].

Ohran discloses the elements of claim 61 as above but does not explicitly indicate "table" Wahl discloses the claimed "table" [Wahl Col 8 line 25-26].

It would have been obvious to one of ordinary skill in the art of data processing to have combined the cited references because "table" as disclosed by Wahl would have enabled Ohran to provide a remote data mirroring system which includes architecture configured for optimal data mirroring.

Furthermore it would help address the problem of the limited bandwidth of a network communication for data over the network.

Claim 62.

The combination of Wahl and Ohran discloses the elements of Claim 61 as above and furthermore it discloses wherein said recording occurs over a plurality of defined time intervals and said recording sets all the table position to the first state at the beginning of each of the time intervals [periodic schedule, Ohran Fig 1-6, Col 13 lines 1- 5, Col 21 lines 58-60].

Claim 63.

The combination of Wahl and Ohran discloses the elements of Claim 61 as above and furthermore it discloses a storage of the contents of the table after each of the time intervals with a date-time stamp corresponding to the interval [store, time stamp Ohran Col 3 lines 11-19].

Claim 64.

The combination of Wahl and Ohran discloses the elements of Claim 63 as above and furthermore it discloses:

- i) a definition of a report to be generated including a time frame including at least one time interval for the report [generate report, Wahl Col 22 lines 38-40, 55-60],
- ii) a processing of the stored contents of the table with date-time stamps within the time frame [time stamp, Ohran Col 3 lines 11-19]
- iii) a generation of a report with the numbers of

track changes recorded in the processed
contents [generate report, Wahl Col 22 lines 38-40, 55-60]

Claim 65.

The combination of Wahl and Ohran discloses the elements of Claim 64 as above and furthermore it discloses the local disk storage facility includes a controller including a set of logical volumes and the defined data blocks includes all the data blocks in the controller, said report definition including the generation of a corresponding reporter command, said processing including combining all the data block changes for the controller for all of the time intervals.[logical groups or volume grouping, local data storage, Wahl, Col 11 lines 45-54].

Claim 66

The combination of Wahl and Ohran discloses the elements of Claim 65 as above and furthermore it discloses wherein said processing includes the combination of the date-time stamped contents of each table in the report time frame a logical OR operation to obtain a final table and the counting of the total number of positions in the final table set to the second state [logical operator, table Wahl Col 8 line 25-26, Col 15 lines 57-60]

Claim 67.

The combination of Wahl and Ohran discloses the elements of Claim 65 as above and furthermore it discloses generation of the reporter command with one parameter specifying a resynchronization time in which corresponding updates should be completed between the first and second remote data storage facilities, said processing providing the required bandwidth of the communications path to provide that resynchronization time [synchronization, generate report, bandwidth, Wahl Col 22 lines 38-40, 55-60,, Col 15 lines 50-52, Wahl Col 4 lines 37-45, Col 18 lines 40-44].

Claim 68.

The combination of Wahl and Ohran discloses the elements of Claim 67 as above and furthermore it discloses communications path includes at least one path with a characteristic bandwidth, said program including a process for determining said bandwidth by dividing the required bandwidth by the number of paths to obtain the characteristic bandwidth [Bandwidth, Wahl Col 3 lines 39-44, Col 16 lines 50-63].

Claim 69.

The combination of Wahl and Ohran discloses the elements of Claim 67 as above and furthermore it discloses communications path will include at least one path with characteristic bandwidth, said program including a process for determining the bandwidth by dividing the required bandwidth by the characteristic bandwidth to determine t number of required paths [Bandwidth, Wahl Col 3 lines 39-44, Col 16 lines 50-63].

Claim 70 .

The combination of Wahl and Ohran discloses the elements of Claim 66 as above and furthermore it discloses the generation of the reporter command with one parameter specifying an available bandwidth of the communications path, said program including a process for providing a resynchronization time during which all updates to the first remote data storage facility will be transferred over the communications path to the second remote data storage facility [generate report, chart, Wahl Col 22 lines 38-43, 55-60].

Claim 71.

The combination of Wahl and Ohran discloses the elements of Claim 70 as above and furthermore it discloses the communications path includes at least one path having a characteristic bandwidth, said program providing the bandwidth as the mathematical product of the number of paths and the characteristic bandwidth [Bandwidth, Wahl Col 3 lines 39-44, Col 16 lines 50-63].

Claim 72.

The combination of Wahl and Ohran discloses the elements of Claim 64 as above and furthermore it discloses the local data storage facility includes a plurality logical volume and the defined data blocks include all the data blocks the controller, said generation of the reporter command including the definition of a logical volume report for set of at least one logical volume, said the combination of all the data

block changes for each of the defined logical volumes [report, logical group (logical volume), Wahl Col 22 lines 38-47].

Claim 73.

The combination of Wahl and Ohran discloses the elements of Claim 72 as above and furthermore it discloses said program includes the combination of all the contents of the table for a logical volume in a logical OR operation to obtain the final table and the summing of the positions in the final table that are set to the second state [logical operator, table Wahl Col 8 line 25-26, Col 15 lines 57-60].

Claim 74.

The combination of Wahl and Ohran discloses the elements of Claim 66 as above and furthermore it discloses the local disk storage facility includes a plurality logical volume and each logical volume includes at least one dataset, said generation of the reporter command defining a dataset report with a set of at least one dataset, said program including the combination of all the data block changes for each of the defined datasets [report, logical group (logical volume), Wahl Col 22 lines 38-47].

Claim 75.

A program as recited in claim 74 wherein said program additionally includes the definition of a mask of the data blocks forming the defined datasets, the generation of a final table that is the logical OR of all the tables in the logical volume containing the defined datasets and the combination of the mask and the final table in a logical AND operation [code, cryptography, Ohran Col 28 lines 33-38].

Claim 77.

Claim 77 is essentially the same as claim 61 and it is rejected for the same reason as applied hereinabove

Claim 78 is essentially the same as claim 62 and it is rejected for the same reason as applied hereinabove

Claim 79 is essentially the same as claim 63 and it is rejected for the same reason as applied hereinabove

Claim 80 is essentially the same as claim 64 and it is rejected for the same reason as applied hereinabove

Claim 81 is essentially the same as claim 65 and it is rejected for the same reason as applied hereinabove

Claim 82 is essentially the same as claim 66 and it is rejected for the same reason as

applied hereinabove

Claim 83 is essentially the same as claim 67 and it is rejected for the same reason as applied hereinabove

Claim 84 is essentially the same as claim 68 and it is rejected for the same reason as applied hereinabove

Claim 85 is essentially the same as claim 69 and it is rejected for the same reason as applied hereinabove

Claim 86 is essentially the same as claim 70 and it is rejected for the same reason as applied hereinabove

Claim 87 is essentially the same as claim 71 and it is rejected for the same reason as applied hereinabove

Claim 88 is essentially the same as claim 72 and it is rejected for the same reason as applied hereinabove

Claim 89 is essentially the same as claim 73 and it is rejected for the same reason as applied hereinabove

Claim 90 is essentially the same as claim 74 and it is rejected for the same reason as applied hereinabove

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Claim 91 is essentially the same as claim 75 and it is rejected for the same reason as applied hereinabove

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emeka Ebirim whose telephone number is 571-272-3994. The examiner can normally be reached on 8:30pm - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on 571-272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-272-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Name: Emeka Ebirim
Art Unit: 2166



SHAHID ALAM
PRIMARY EXAMINER